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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,091	06/04/2001	Deborah Charych	1680.002	6042

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EXAMINER
TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,091	CHARYCH ET AL.	
	Examiner	Art Unit	
	MY-CHAU T TRAN	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,60-73 and 79-96* is/are pending in the application.

4a) Of the above claim(s) *94-96* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,60-73 and 79-93* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Applicant's amendment filed 7/30/2004 is acknowledged and entered. Claims 1, and 73 have been amended. Claims 92-96 have been added.

2. Claims 55-59,and 74-78 were canceled and Claims 1, 60-61, 72-73, and 79-80 were amended by the amendment filed on 3/18/04.

3. Claims 2-20, and 53 are canceled; Claim 1 was amended; and Claims 55-91 were added by the amendment filed on 6/30/03.

4. Claims 21-52, and 54 are canceled, and Claims 3, 9, 16, and 20 were amended by the amendment filed on 12/9/02.

5. Claims 1, 60-73, 74-96 are pending.

Election/Restrictions

6. Newly submitted claims 94-96 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The invention of claims 94-96, which is refers to as Group 2, and the invention of claims 1, 60-73, and 74-93, which is refers to as Group 1, are drawn to distinct inventions, which differ in their structural features. Group 1 is drawn a composition and Group 2 is drawn to an

apparatus, such as the features of one or more fluorescently labeled proteins bound to one or more of the protein binding agent; and the feature of a fluorescent signal array scanner. These features are not required for the invention of group 1. Thus these inventions of Groups 1, and 6 have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01) and thus the restriction between these groups are proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 94-96 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

7. Claims 94-96 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), and MPEP § 821.03, as being drawn to a nonelected invention.

Priority

8. This application claims priority to a provisional application 60/209,711 filed 6/05/2000.

9. Claims 1, 60-73, and 74-93 are treated on the merit in this Office Action.

Withdrawn Rejection

10. The rejection of claims 1, 60-73, and 79-91 under 35 USC 112, first paragraph (new matter)) has been withdrawn in light of applicant's arguments, see page 8, filed 7/30/2004, and amendments of claims 1 and 73.

Maintained Rejections

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims 1, 60-61, 63-66, 73, 79-80, 82-85, and new claims 92-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070). *Note: The rejection is modified to address the new limitation of claims 1 and 73.*

Gustafson et al. disclose an apparatus comprises a substrate for attachment of binding agents (col. 5, lines 1-10; fig. 1). The binding agents include proteins (protein-binding agent) (col. 4, lines 6-32). The substrate comprises a flat layer (substantially planar surface) (ref. #14), a metal layer (ref. #12), and a transparent layer (ref. #2) (col. 5, lines 1-10; fig. 1). The flat layer comprises silicon or glass (col. 5, lines 36-50). The metal layer comprises metals such as aluminum (col. 5, lines 11-16). The transparent layer comprises materials such as silicon dioxide (col. 5, lines 17-26) and that the silicon dioxide coating is applied to the metal layer (col. 5, lines 61-63). Additionally, the thickness of the silicon dioxide layer is between 800 to 1200 Å (col. 3, lines 11-12) and the silicon dioxide is treated with a reagent such as aminosilane (anchoring segment and linker segment) (col. 6, lines 16-18). The aminosilane are functionalized with functional group such as amino, and thiol group (col. 7, lines 23-63).

The apparatus of Gustafson et al. does not expressly disclose that the binding agent include a peptidomimetic segment.

Pease et al. teach an apparatus comprise a substrate with an array of polymers such as peptide analogs such as peptidomimetics and oligonucleotides (col. 1, lines 52-57; col. 6, lines 4-54). The substrate is flat and comprise of silicon or glass surface (col. 8, lines 44-54; col. 12, lines 2-12). The surface of the solid substrate contain reactive groups such as amino (col. 12, lines 19-23). The substrate includes a surface with a layer of linker (col. 10, lines 24-28; col. 12, lines 31-35). Additionally, Pease et al. disclose that the substrate is comprises a modified silicon (non-native oxide-coated metal) (col. 12, lines 2-3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the binding agent to Gustafson et al. to include a peptidomimetic segment and a linker segment as taught by Pease et al. One of ordinary skill in the art would have been motivated to modify the binding agent to Gustafson et al. to include a peptidomimetic segment because the peptidomimetic protein would provide the advantage of a more economical production, greater chemical stability, enhanced pharmacological properties, altered specificity, and reduced antigenicity (Pease: col. 6, lines 54-60) since both Pease et al. and Gustafson et al. disclose an apparatus comprising an array of protein immobilized on a solid substrate (Gustafson: col. 5, lines 1-10; fig. 1; Pease: col. 1, lines 52-57). Furthermore, one of ordinary skill in the art would have reasonably expectation of success in the combination of Gustafson et al. and Pease et al. because the modification would enhance the specificity of the substrate for use in a bioassay.

The newly added limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" of claims 1 and 73 is a functional

limitation or a property of the claimed silicon dioxide layer and it is presumed to be inherent. See MPEP § 2112.01. MPEP § 2112.01 states that:

> *II. >< COMPOSITION CLAIMS — IF THE COMPOSITION IS PHYSICALLY THE SAME, IT MUST HAVE THE SAME PROPERTIES*
>
> *"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.").*

Thus this limitation is interpreted as an inherent property of the silicon dioxide layer. Additionally, the range thickness of the silicon dioxide layer, i.e. 100 Å to 3000 Å (see col. 6, lines 51-55) of Gustafson et al. encompasses the claimed range thickness of the silicon dioxide layer of the claimed array, i.e. between about 200 and 900 Å of new claims 93-94.

The newly added limitation of "one or more reagents for conducting a differential binding assay" of claimed kit of claim 73 would be a choice of experimental design and is considered within the purview of the cited prior art. Because it would be obvious to package the array in a kit format would provide an automated bioanalytical screening method to be use in an environment other than the laboratory.

13. Claims 62, and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070) as applied to claims 1, 60-61, 63-64, 73, 79-80, 82-83, and new claims 92-93 above, and further in view of

Wagner et al. (US Patent 6,406,921 B1). *Note: The rejection is modified to address the new limitation of claims 1 and 73.*

Gustafson et al. and Pease et al. disclose an apparatus comprising an array of protein immobilized on a substrate (Gustafson: col. 5, lines 1-10; fig.1; Pease: col. 1, lines 52-57). The protein includes peptide analogs such as peptidomimetic (Pease: col. 6, lines 4-54). The surface of the substrate comprises an anchoring segment and a linker segment (Gustafson: col. 6, lines 16-18 and col. 7, lines 23-63; Pease: col. 10, lines 24-28 and col. 12, lines 19-23 and 31-35)

The newly added limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" of claims 1 and 73 is a functional limitation or a property of the claimed silicon dioxide layer and it is presumed to be inherent. See MPEP § 2112.01. MPEP § 2112.01 states that:

> *II. >< COMPOSITION CLAIMS — IF THE COMPOSITION IS PHYSICALLY THE SAME, IT MUST HAVE THE SAME PROPERTIES*
>
> *"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.").*

Thus this limitation is interpreted as an inherent property of the silicon dioxide layer. Additionally, the range thickness of the silicon dioxide layer, i.e. 100 Å to 3000 Å (see col. 6, lines 51-55) of Gustafson et al. encompasses the claimed range thickness of the silicon dioxide layer of the claimed array, i.e. between about 200 and 900 Å of new claims 93-94.

The newly added limitation of "one or more reagents for conducting a differential binding assay" of claimed kit of claim 73 would be a choice of experimental design and is considered within the purview of the cited prior art. Because it would be obvious to package the array in a kit format would provide an automated bioanalytical screening method to be use in an environment other than the laboratory.

The apparatus of Gustafson et al. and Pease et al. does not expressly include a maleleimide functional group for binding with the protein binding agents.

Wagner et al. teach an array of proteins comprising a plurality of patches in discrete, known regions on a substrate, where a protein with different, known sequence is immobilized on each patch (col. 3, lines 26-29). The protein is refers to a polymer of amino acid that also include amino acid polymers in which one or more amino acid residues is an artificial chemical analogue of a corresponding naturally occurring amino acid (col. 6, lines 1-11). The array comprises of a monolayer on the surface of the substrate and the proteins are immobilized on the monolayer (col. 8, lines 9-17). They are three major classes of monolayer formation are preferably used to expose high densities of bioreactive functionalities on the array, which are alkylsiloxane monolayer, alkyl-thiol/dialkyldisulfide monolayer, and alkyl monolayer (col. 8, lines 18-41). The functional group on the monolayer for binding with the protein includes maleleimide and N-hydroxysuccinimide (col. 11, lines 39-53).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a maleleimide functional group for binding with the protein binding agents as taught by Wagner et al. in the apparatus of Gustafson et al. and Pease et al. One of ordinary skill in the art would have been motivated to include a maleleimide functional

group for binding with the protein binding agents in the apparatus of Gustafson et al. and Pease et al. because the type of functional group use would be a choice of experimental design and is considered within the purview of the cited prior art. Furthermore, one of ordinary skill in the art would have reasonably expectation of success in the combination of Gustafson et al., Pease et al., and Wagner et al. because Wagner et al. discloses that there are many possible functional group to use for immobilizing protein on a surface thus it depend on the choice of substrate and coating (col. 8, lines 34-41).

14. Claims 67-72, and 86-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070) as applied to claims 1, 60-61, 63-64, 73, 79-80, 82-83, and new claims 92-93 above, and further in view of Barrett et al (US Patent 5,482,867). *Note: The rejection is modified to address the new limitation of claims 1 and 73.*

Gustafson et al. and Pease et al. disclose an apparatus comprising an array of protein immobilized on a substrate (Gustafson: col. 5, lines 1-10; fig.1; Pease: col. 1, lines 52-57). The protein includes peptide analogs such as peptidomimetic (Pease: col. 6, lines 4-54). The surface of the substrate comprises an anchoring segment and a linker segment (Gustafson: col. 6, lines 16-18 and col. 7, lines 23-63; Pease: col. 10, lines 24-28 and col. 12, lines 19-23 and 31-35)

The newly added limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" of claims 1 and 73 is a functional limitation or a property of the claimed silicon dioxide layer and it is presumed to be inherent. See MPEP § 2112.01. MPEP § 2112.01 states that:

II. >< COMPOSITION CLAIMS — IF THE COMPOSITION IS PHYSICALLY THE SAME, IT MUST HAVE THE SAME PROPERTIES

"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.").

Thus this limitation is interpreted as an inherent property of the silicon dioxide layer. Additionally, the range thickness of the silicon dioxide layer, i.e. 100 Å to 3000 Å (see col. 6, lines 51-55) of Gustafson et al. encompasses the claimed range thickness of the silicon dioxide layer of the claimed array, i.e. between about 200 and 900 Å of new claims 93-94.

The newly added limitation of "one or more reagents for conducting a differential binding assay" of claimed kit of claim 73 would be a choice of experimental design and is considered within the purview of the cited prior art. Because it would be obvious to package the array in a kit format would provide an automated bioanalytical screening method to be use in an environment other than the laboratory.

The apparatus of Gustafson et al. and Pease et al. does not expressly disclose that the anchoring segment includes biotin and avidin.

Barrett et al. teaches an array of immobilized ligands on predefined regions of a surface of a solid support (col. 2, lines 36-41). The method involves attaching to the surface a caged binding member (anchor). The ligand includes peptides (col. 4, lines 34-60). The caged binding member is a biotin analog (col. 5, lines 45-56). Avidin can be immobilized onto the surface of the solid support and bind to biotin (col. 5, lines 57-65). One type of biotin analog is a biotin

with N-succinimidyl and a linking group of 6-aminocaproic (NHS-lc-lc-biotin) (col. 14, lines 66-67 to col. 15, lines 1-30).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the anchoring segment includes biotin and avidin as taught by Barrett et al. in the apparatus of Wagner et al. and Pease et al. One of ordinary skill in the art would have been motivated to include the anchoring segment includes biotin and avidin in the apparatus of Wagner et al. and Pease et al. for the advantage of providing an efficiently and stably attaching a broad range ligands on predefined regions of a solid support (Barrett: col. 2, lines 26-32). One of ordinary skill in the art would have reasonably expectation of success in the combination of Gustafson et al., Pease et al., and Barrett et al. because Wagner et al., Pease et al., and Barrett et al. disclose an apparatus comprising an array of biomolecules such as protein immobilized on a solid substrate (Gustafson: col. 5, lines 1-10; fig. 1; Pease: col. 1, lines 52-57; Barrett: col. 2, lines 36-41).

New Rejections – Necessitated by Amendment

Claim Rejections - 35 USC § 112

15. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. Claims 1, 60-72, and 92 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The instant claim 1 briefly recites an array. The array comprises a) a solid substrate having a substantially planar surface comprising a layer of aluminum formed on a glass base material, the aluminum coated with a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array; and b) a plurality of different protein-binding agents bound to said substrate. Each of said protein-binding agents comprises 1) an anchoring segment stably bound to the substrate surface; 2) a peptidomimetic protein-binding segment; and 3) a linker segment connecting and separating the anchoring and peptidomimetic segments.

The recitation of '*a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array*' claimed in claim 1, have no clear support in the specification and the claims as originally filed. The specification on page 22 disclosed '*it has been found that amplification of the fluorescent signal used in assays conducted with microarrays in accordance with the present invention may be enhanced by etching the commercially available functionalized and spotted aluminum slides (Amersham) to reduce the oxide layer thickness to about 200 Å to about 900 Å, preferably about 500 Å*' (lines 7-10), i.e. the fluorescent signal is amplify by etching the commercially available functionalized and spotted aluminum slides, is not support for 'a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array', i.e. the silicon dioxide coating of the claimed array is 'configured' to amplify a fluorescent signal. That is modifying the silicon dioxide layer of a commercially available aluminum slides to amplify the fluorescent signal is not support for the claimed array having silicon dioxide coating configured to amplify a fluorescent signal.

Additionally, example 2 discloses modifying the commercially available functionalized and spotted aluminum slides of Amersham-Pharmacia by a) functionalizing the amino-modified Al surfaces with SMCC; b) spotting the slides with peptoid library; and c) etching the silicon oxide layer to amplify both the Cy5 and Cy3 signals (see specification pg. 35, line 33 to pg. 36, line 6). Therefore, the scope of the invention as originally disclosed in the specification would not encompass the scope of the limitation of a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

17. Claims 73, 79-91, and 93 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The instant claim 73 briefly recites a kit. The kit comprises an array, and one or more reagents for conducting a differential binding assay. The array comprises a) a solid substrate having a substantially planar surface comprising a layer of aluminum formed on a glass base material, the aluminum coated with a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array; and b) a plurality of different protein-binding agents bound to said substrate. Each of said protein-binding agents comprises 1) an anchoring

segment stably bound to the substrate surface; 2) a peptidomimetic protein-binding segment; and 3) a linker segment connecting and separating the anchoring and peptidomimetic segments.

The recitation of *'a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array'* claimed in claim 73, have no clear support in the specification and the claims as originally filed. The specification on page 22 disclosed '*it has been found that amplification of the fluorescent signal used in assays conducted with microarrays in accordance with the present invention may be enhanced by etching the commercially available functionalized and spotted aluminum slides (Amersham) to reduce the oxide layer thickness to about 200 Å to about 900 Å, preferably about 500 Å*' (lines 7-10), i.e. the fluorescent signal is amplify by etching the commercially available functionalized and spotted aluminum slides, is not support for 'a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array', i.e. the silicon dioxide coating of the claimed array is 'configured' to amplify a fluorescent signal. That is modifying the silicon dioxide layer of a commercially available aluminum slides to amplify the fluorescent signal is not support for the claimed array having silicon dioxide coating configured to amplify a fluorescent signal. Additionally, example 2 discloses modifying the commercially available functionalized and spotted aluminum slides of Amersham-Pharmacia by a) functionalizing the amino-modified Al surfaces with SMCC; b) spotting the slides with peptoid library; and c) etching the silicon oxide layer to amplify both the Cy5 and Cy3 signals (see specification pg. 35, line 33 to pg. 36, line 6). Therefore, the scope of the invention as originally disclosed in the specification would not encompass the scope of the limitation of a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

Response to Arguments

18. Applicant's arguments directed to the rejection under 35 USC 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070) for claims 1, 60-61, 63-66, 73, 79-80, 82-85, and new claims 92-93 were considered but they are not persuasive for the following reasons.

Applicant contends that the combination of Gustafson et al. and Pease et al. is not obvious over the presently claimed invention because 1) neither Gustafson et al. nor Pease et al. teaches the limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" and there is no motivation to combine the references of Gustafson et al. and Pease et al. Thus the combination of Gustafson et al. and Pease et al. is not obvious over the presently claimed invention.

Applicant's arguments are not convincing since the combination of Gustafson et al. and Pease et al. is not obvious over the presently claimed invention. First, the limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" is a functional limitation or a property of the claimed silicon dioxide layer and it is presumed to be inherent. See MPEP § 2112.01. MPEP § 2112.01 states that:

> *II. >< COMPOSITION CLAIMS — IF THE COMPOSITION IS PHYSICALLY THE SAME, IT MUST HAVE THE SAME PROPERTIES*
>
> *"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658*

(Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.").

Thus this limitation is interpreted as an inherent property of the silicon dioxide layer. Additionally, the range thickness of the silicon dioxide layer, i.e. 100 Å to 3000 Å (see col. 6, lines 51-55) of Gustafson et al. encompasses the claimed range thickness of the silicon dioxide layer of the claimed array, i.e. between about 200 and 900 Å of new claims 93-94.

Second, In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re* Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re* Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is found in the reference of the peptidomimetic protein would provide the advantage of a more economical production, greater chemical stability, enhanced pharmacological properties, altered specificity, and reduced antigenicity (Pease: col. 6, lines 54-60).

Thus the combination of Gustafson et al. and Pease et al. is not obvious over the presently claimed invention.

19. Applicant's arguments directed to the rejection under 35 USC 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070)

as applied to claims 1, 60-61, 63-64, 73, 79-80, 82-83, and new claims 92-93 above, and further in view of Wagner et al. (US Patent 6,406,921 B1) for claims 62, and 81 were considered but they are not persuasive for the following reasons.

Applicant argues that the combination of Gustafson et al., Pease et al., and Wagner et al. is not obvious over the presently claimed invention because 1) neither Gustafson et al. nor Pease et al. teaches the limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" and there is no motivation to combine the references of Gustafson et al. and Pease et al. Thus the combination of the combination of Gustafson et al., Pease et al., and Wagner et al. is not obvious over the presently claimed invention.

Applicant's arguments are not convincing since the combination of Gustafson et al. and Pease et al. is not obvious over the presently claimed invention. First, the limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" is a functional limitation or a property of the claimed silicon dioxide layer and it is presumed to be inherent. See MPEP § 2112.01. MPEP § 2112.01 states that:

> *II. >< COMPOSITION CLAIMS — IF THE COMPOSITION IS PHYSICALLY THE SAME, IT MUST HAVE THE SAME PROPERTIES*
>
> *"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.").*

Thus this limitation is interpreted as an inherent property of the silicon dioxide layer. Additionally, the range thickness of the silicon dioxide layer, i.e. 100 Å to 3000 Å (see col. 6, lines 51-55) of Gustafson et al. encompasses the claimed range thickness of the silicon dioxide layer of the claimed array, i.e. between about 200 and 900 Å of new claims 93-94.

Second, In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re* Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re* Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is found in the reference of the peptidomimetic protein would provide the advantage of a more economical production, greater chemical stability, enhanced pharmacological properties, altered specificity, and reduced antigenicity (Pease: col. 6, lines 54-60).

Thus the combination of Gustafson et al., Pease et al., and Wagner et al. is not obvious over the presently claimed invention.

20. Applicant's arguments directed to the rejection under 35 USC 103(a) as being unpatentable over Gustafson et al. (US Patent 5,478,527) and Pease et al. (US Patent 5,831,070) as applied to claims 1, 60-61, 63-64, 73, 79-80, 82-83, and new claims 92-93 above, and further in view of Barrett et al (US Patent 5,482,867) for claims 67-72, and 86-91 were considered but they are not persuasive for the following reasons.

Applicant alleges that the combination of Gustafson et al., Pease et al., and Barrett et al. is not obvious over the presently claimed invention because 1) neither Gustafson et al. nor Pease et al. teaches the limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" and there is no motivation to combine the references of Gustafson et al. and Pease et al. Thus the combination of the combination of Gustafson et al., Pease et al., and Barrett et al. is not obvious over the presently claimed invention.

Applicant's arguments are not convincing since the combination of Gustafson et al., Pease et al., and Barrett et al. is not obvious over the presently claimed invention. First, the limitation of "a silicon dioxide coating configured to amplify a fluorescent signal from a labeled protein bound to the array" is a functional limitation or a property of the claimed silicon dioxide layer and it is presumed to be inherent. See MPEP § 2112.01. MPEP § 2112.01 states that:

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> *"Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (Applicant argued that the claimed composition was a pressure sensitive adhesive containing a tacky polymer while the product of the reference was hard and abrasion resistant. "The Board correctly found that the virtual identity of monomers and procedures sufficed to support a prima facie case of unpatentability of Spada's polymer latexes for lack of novelty.").*

Thus this limitation is interpreted as an inherent property of the silicon dioxide layer. Additionally, the range thickness of the silicon dioxide layer, i.e. 100 Å to 3000 Å (see col. 6, lines 51-55) of Gustafson et al. encompasses the claimed range thickness of the silicon dioxide layer of the claimed array, i.e. between about 200 and 900 Å of new claims 93-94.

Second, In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re* Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re* Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is found in the reference of the peptidomimetic protein would provide the advantage of a more economical production, greater chemical stability, enhanced pharmacological properties, altered specificity, and reduced antigenicity (Pease: col. 6, lines 54-60).

Thus the combination of the combination of Gustafson et al., Pease et al., and Barrett et al. is not obvious over the presently claimed invention.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MY-CHAU T TRAN whose telephone number is 571-272-0810. The examiner can normally be reached on Mon.: 8:00-2:30; Tues.-Thurs.: 7:30-5:00; Fri.: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDREW WANG can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mct
October 31, 2004

PADMASHRI PONNALURI
PRIMARY EXAMINER